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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO
08/907,182	08/06/1997	SHUNPEI YAMAZAKI	07977/023002	7978
	90 11/18/2004		EXAMINER	
FISH & RICHARDSON P.C. 1425 K STREET, N.W. 11TH FLOOR WASHINGTON, DC 20005-3500			DIAMOND	, ALAN D
			ART UNIT	PAPER NUMBER
WASHINGTOR	N, DC 20005-3500		1753	
•			DATE MAILED: 11/18/2004	

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)				
	08/907,182	YAMAZAKI ET AL.				
Office Action Summary	Examiner	Art Unit				
The MAN INC DATE AND	Alan Diamond	1753				
The MAILING DATE of this communication appears on the cover sheet with the correspondence address Period for Reply						
A SHORTENED STATUTORY PERIOD FOR REPLY THE MAILING DATE OF THIS COMMUNICATION.  - Extensions of time may be available under the provisions of 37 CFR 1.13 after SIX (6) MONTHS from the mailing date of this communication.  - If the period for reply specified above is less than thirty (30) days, a reply - If NO period for reply is specified above, the maximum statutory period w - Failure to reply within the set or extended period for reply will, by statute, Any reply received by the Office later than three months after the mailing earned patent term adjustment. See 37 CFR 1.704(b).	36(a). In no event, however, may a reply be timed within the statutory minimum of thirty (30) days will apply and will expire SIX (6) MONTHS from the conficulty of the confic	nely filed s will be considered timely. the mailing date of this communication.				
Status						
1) Responsive to communication(s) filed on 06 Jun	iv 2004					
2a) ☐ This action is <b>FINAL</b> . 2b) ☑ This action is non-final.						
3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is						
closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213.						
Disposition of Claims						
4)	n from consideration. e allowed. f. sted to.	g in the application.				
Application Papers						
<ul> <li>9) The specification is objected to by the Examiner.</li> <li>10) The drawing(s) filed on <u>06 August 1997</u> is/are: a Applicant may not request that any objection to the dr Replacement drawing sheet(s) including the correction</li> <li>11) The oath or declaration is objected to by the Example 1.</li> </ul>	a) accepted or b) objected to rawing(s) be held in abeyance. See on is required if the drawing(s) is obje	37 CFR 1.85(a).				
Priority under 35 U.S.C. § 119						
12) Acknowledgment is made of a claim for foreign process.  a) All b) Some * c) None of:  1. Certified copies of the priority documents by Certified copies of the priority documents by Some * c). Copies of the priority documents by Copies of the certified copies of the priority application from the International Bureau (1) * See the attached detailed Office action for a list of	have been received. have been received in Applicatior y documents have been received PCT Rule 17.2(a)).	n No. <u>08/623,336</u> . in this National Stage				
Attachment(s)						
1) Notice of References Cited (PTO-892) 2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 07062004	4) Interview Summary (P Paper No(s)/Mail Date 5) Notice of Informal Pate 6) Other:	•_				

U.S. Patent and Trademark Office PTOL-326 (Rev. 1-04)

#### **DETAILED ACTION**

# Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 6, 2004 has been entered.

#### Comments

- 2. The provisional obviousness-type double patenting rejection over the claims of copending application 09/939,767 is most in view of the fact that there are no method claims in said copending application, and the semiconductor device in the claims of said copending application does not anticipate or render obvious the instant method.
- 3. The obviousness-type double patenting rejection over the claims of U.S. Patent 6,544,826 (the '826 patent) have been overcome by Applicant's amendment of independent claims 26, 34, 42, 51, 59, 67, 76, 82, and 86 so as to require that the gettering layer comprising phosphorus is formed by a CVD technique. The '826 patent applies its phosphorus to the crystallized semiconductor film using a solution, but not using a CVD technique.

## Claim Objections

4. Claim 103 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is

required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 103 does not further limit any of parent claims 26, 34, 42, 51, 59, 67, 76, 82, or 86 because said parent claims already require that the gettering layer is formed by a CVD technique.

## **Double Patenting**

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 26-28, 30, 32-36, 38-44, 46-53, 55, 57-61, 63-69, 71, 73-76, 78, 79, 82, 86, 90, 91, 93-99, 103, and 106 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-73 of U.S. Patent No. 6,808,968. Although the conflicting claims are not identical, they are not patentably distinct from each other because the method of manufacturing a semiconductor device in the claims of said patent add a metal, such as Fe, Ni, or Pt, to an amorphous silicon film (with no indication in the patent's claims of impurity doping, e.g., it is substantially intrinsic) which is over a substrate; crystallize the semiconductor film; form a semiconductor layer by CVD over the crystallized semiconductor film,

wherein the semiconductor layer contains an impurity element from group 15 of the periodic table, e.g., contains phosphorous as an impurity; gettering the metal from the crystalline semiconductor by a heat treatment; and removing the gettering layer (see, for example, claims 1, 3, 7, 13, and 16 of said patent). Claim 73 of said patent recites various semiconductor devices that can be prepared using the patent's claimed method, and many of these devices would require the forming of a semiconductor junction. Although a photovoltaic device is not listed said claim 73, a photovoltaic device (which has a semiconductor junction) is a typical semiconductor device that could be manufactured using the patent's claimed method. The claims of said patent do not specifically recite features such as the substrate is an insulating substrate, the temperature and time for the heat treatment, the concentration of phosphorous impurity in the semiconductor layer, or using a nitrogen atmosphere for the crystallization and gettering. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used or determined these features so that a crystalline semiconductor with metal removed could be obtained while practicing the claimed method of said patent. While it is noted above that said amorphous silicon film is substantially intrinsic, the use of a boron doped amorphous silicon film would also have been within the skill of an artisan.

# Allowable Subject Matter

7. Claims 29, 37, 45, 54, 62, and 70 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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- 8. Claims 81, 83-85, 87-89, 104, 105, and 107 are allowed.
- 9. The following is a statement of reasons for the indication of allowable subject matter: Instant claims 29, 37, 45, 54, 62, and 70 recite that the gettering layer comprises phosphorous silicate glass (PSG) containing phosphorous at a concentration 1 to 30 wt%. The claims of U.S. Patent 6,808,968 (the '968 patent) relied upon above by Examiner suggest a phosphorous-doped silicon layer for the gettering layer, not a PSG layer.

Independent claims 81, 83-85, and 87-89 require introducing a gettering material into a surface of the crystallized semiconductor film within a region of 0.1 to 0.2 micron in depth from the surface of the crystallized semiconductor film. This is not taught or suggest by the claims of said '968 patent.

### Conclusion

- 10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patents 5,915,174, 5,956,579, 6,548,370, 6,664,144, 6,670,225, and 6,777,273 are hereby made of record.
- 11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 571-272-1338. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alan Diamond Primary Examiner Art Unit 1753

Alan Diamond November 4, 2004 ), () .

Continuation of Disposition of Claims: Claims rejected are 26-28,30,32-36,38-44,46-53,55,57-61,63-69,71,73-76,78,79,82,86,90,91,93-99,103 and 106.